

wherein said electrical features include vias,

wherein said vias are selectively filled with a conducting material and a solid insulating material.

REMARKS

Claims 19, 21 to 25, 29 and 30 remain in the present application. Claim 19 has been amended for which there is support in the specification, claims and drawings as originally filed.

Reconsideration of the Examiner's decisions and reexamination of this application are respectfully requested.

A clean version of the amended claim is included with this Amendment After Final. A VERSION SHOWING CHANGES MADE is included in the APPENDIX.

The Drawings:

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A sheet of drawings containing Figures 3A-C with appropriate cross-hatching is submitted with this Amendment After Final for the Examiner's approval.

The §102 rejections:

Claims 19, 29 and 30 have been rejected by the Examiner under 35 USC §102(b) as being anticipated by Thornberg U.S. Patent 5,360,948.

Claim 19 has been amended by indicating that the "vias are selectively filled with a conducting material and a solid insulating material". While there is no clear literal support for "solid", it is nevertheless inherent in Applicants' invention wherein selected vias are filled with a non-conductive material as illustrated in step 21 of Figure 2.

Entry of this Amendment After Final is respectfully requested as it raises no new issues requiring search on the part of the Examiner. In the original search, the Examiner should have searched for vias selectively filled with a solid insulating material as this is the clear meaning of Applicants' claim 19. The present amendment to claim 19 is only for clarification purposes as the meaning of "selectively filled with ...an insulating material" should have been clear that the vias are filled with something other than air. Further, Applicants' specification and drawings also make clear (for example, compare Figures 3A and 3C) that vias filled with an insulating material means solid

material and vias "filled" with air are not filled in the true sense of the word but, rather, are empty.

Turning to the reference, Thornberg again shows vias, some of which are filled with metal and some of which are left unfilled. Certainly, Thornberg cannot show vias filled with a solid insulating material as claim 19 presently states. Therefore, claim 19 cannot be anticipated by Thornberg.

With respect to claims 29 and 30, the Examiner states that "Thornberg discloses any additional layers with numerous modification and changes can be made, column 4, line 51-67."

Applicants respectfully disagree with the Examiner in that for a reference to anticipate, that reference must show every feature of the claim. While Thornberg does indicate that "numerous modifications and changes are possible", Thornberg does not show two layers having the same generic grid of vias as claimed in claims 29 and 30. Therefore, Thornberg cannot anticipate Applicants' claims 29 and 30. The Examiner may wish to change the rejection to indicate that Thornberg renders claims 29 and 30 obvious under 35 USC §103. Even in this event, however, Thornberg cannot render claims 29 and 30 obvious since there is no teaching in Thornberg for the two layers to have the same generic grid of vias.

The Applicants acknowledge the Examiner's courtesy in granting an interview with the undersigned on November 18, 2002. During the interview, claims 19, 29 and 30 were discussed but no agreement was reached as to the disposition of the claims.

The §103 rejections:

Claims 21 to 25 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Thornberg in view of Evans et al. U.S. Patent 6,255,602 (hereafter "Evans").

Since claims 21 to 25 depend from claim 19, and claim 19 is believed to be allowable, then claims 21 to 25 should be allowable as well.

As Applicants' stated in their last response, claim 22 is believed to be independently patentable. Claim 22 claims two layers, each of which has vias selectively filled with a conductive material and an insulating material. Applicants went on to show how the combination of Thornberg and Evans cannot teach Applicants' claims 22. In the present Office Action, the Examiner states that "...as explained and disclosed by the prior art of Thornberg, column 4, lines 51-67, any number of layers with numerous modifications and changes are possible to construct a multilayer module." It is true that Thornberg supposes that other modifications to his invention can be made. This, however, cannot substitute for a sound rationale from the Examiner as

to how the combination of Thornberg and Evans can teach Applicants' claim 22. The Examiner has not provided such a rationale. This being the case, the Examiner has failed to state a prima facie case of obviousness with respect to claim 22.

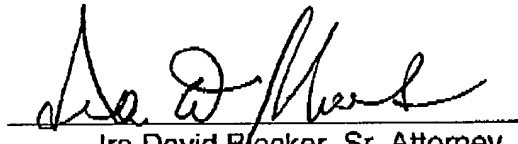
Summary:

In view of all of the preceding remarks, it is submitted that all of claims 19, 21 to 25, 29 and 30 are in condition for allowance. If the Examiner finds this application deficient in any respect, the Examiner is invited to telephone the undersigned at the Examiner's earliest possible convenience to resolve such deficiency.

Respectfully submitted,

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APPENDIX
VERSION SHOWING CHANGES MADE

19. (Thrice Amended) A multi-layer substrate structure comprising:

at least one layer having generic electrical features altered to customize said layer,

wherein said electrical features include vias,

wherein said vias are selectively filled with a conducting material and [an] a solid insulating material.

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FIG.3A

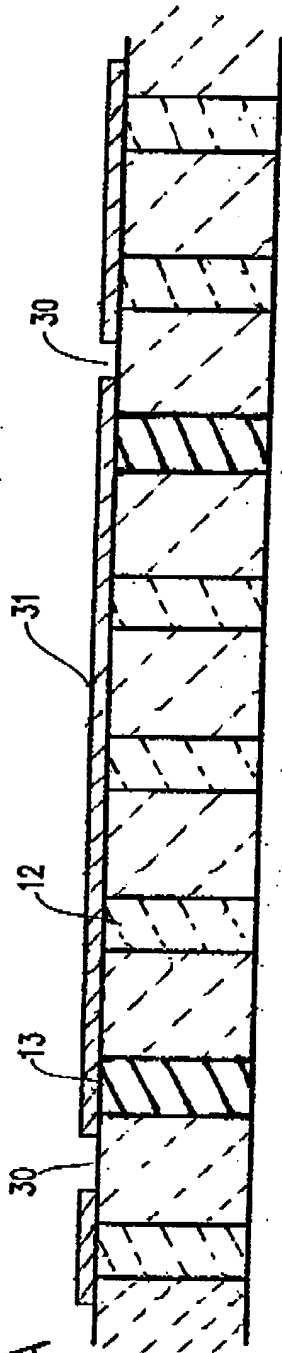


FIG.3B

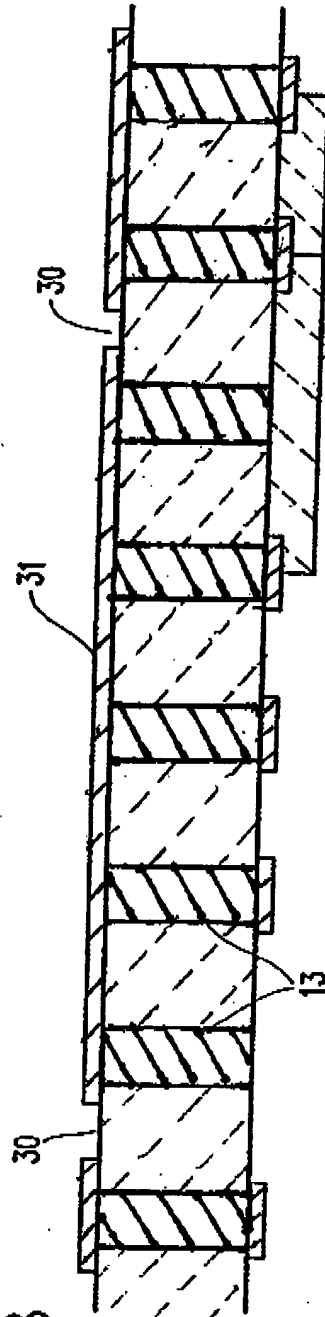
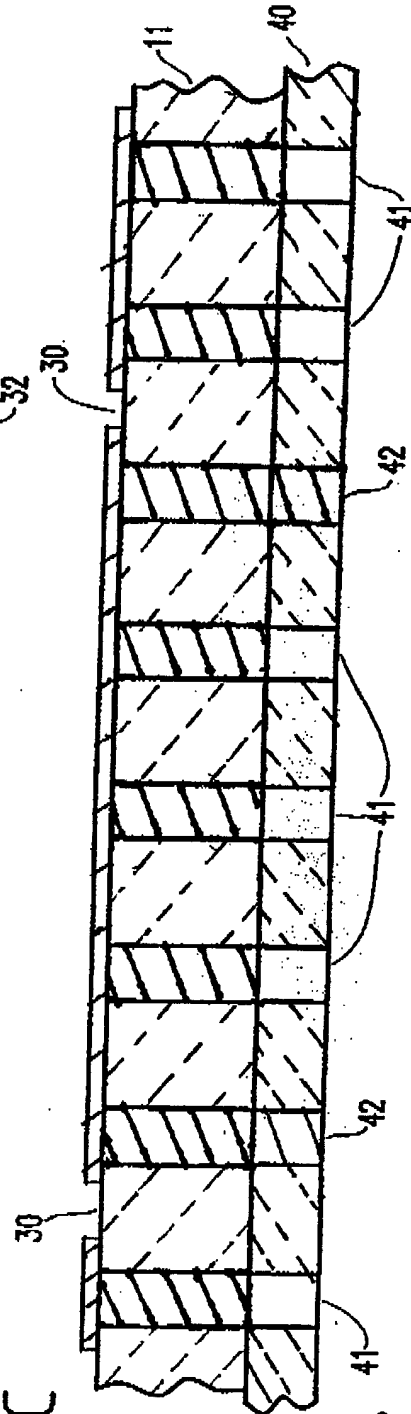


FIG.3C



*Proposed
drawing
correction*